

PATENT ABSTRACTS OF JAPAN

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(54) HEATING ELEMENT AND PRODUCTION THEREOF

(57)Abstract:

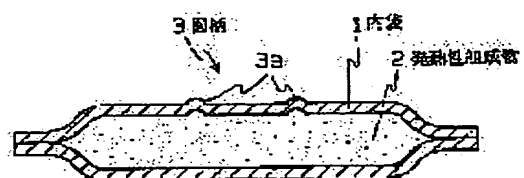
PROBLEM TO BE SOLVED: To prevent a pattern formed on an inner bag from disappearing because of steam and friction and further to improve the appearance of the pattern by forming the pattern on the inner bag by outward or inward protruding the prescribed part of the inner bag through emboss working.

SOLUTION: The heating element is constituted by housing a heating composition 2 to be heated in the presence of air inside a gas permeable inner bag 1 and sealing the inner bag 1 into an air-tight outer bag.

Besides, a pattern 3 is formed at the prescribed part of the inner bag 1 by embossing work. When forming the pattern 3 on the inner bag 1, a film for consisting of an upper surface is fed to a molding machine for emboss mold having male and female dies corresponding to the pattern 3, and the prescribed part of the film is embossed so as to be protruded outward or inward.

Afterwards, the upper surface side and lower surface side patterned films are overlapped and formed into bag,

a gap between two films is filled with the heating composition 2 and further, it is sealed into the air-tight outer bag.



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CLAIMS

[Claim(s)]

[Claim 1] The heating element with which it comes to form a pattern in the storage bag concerned by holding the febrile constituent which generates heat under existence of air in the storage bag of permeability, and said storage bag's being the heating element which it comes to enclose in an airtight bag, and projecting the predetermined part of said storage bag by embossing to the method of outside, or the inner direction.

[Claim 2] The heating element according to claim 1 which it comes to project by carrying out embossing while said storage bag consists of thermal melting arrival nature resin and said predetermined part heats.

[Claim 3] The heating element according to claim 2 with which said storage bag consists of a lamination object of paper or a nonwoven fabric, and a polyethylene film.

[Claim 4] The process of the heating element which comes to have the process which forms a pattern in the storage bag concerned by holding the febrile constituent which generates heat under existence of air in the storage bag of permeability, and making it project to the method of outside, or the inner direction by said storage bag's being the process of the heating element which it comes to enclose in an airtight bag, and carrying out embossing of the predetermined part of said storage bag.

[Claim 5] The process of the heating element which comes to have the process which produces said storage bag using the ingredient with which the pattern was formed by making it project to the method of outside, or the inner direction when the febrile constituent which generates heat under existence of air is held in the storage bag of permeability, and said storage bag is the process of the heating element which it comes to enclose in an airtight bag and carries out embossing of the predetermined part.

[Claim 6] The process of the heating element according to claim 5 or 6 made to project to the method of outside, or the inner direction by carrying out embossing, said storage bag consisting of thermal melting arrival nature resin, and heating said predetermined part.

[Claim 7] The heating element with which it comes to form a pattern in the storage bag concerned when the febrile constituent is held under existence of air in the storage bag of permeability, said storage bag is the heating element which it comes to enclose in an airtight bag and the predetermined part of said storage bag is made thin by stamp processing.

[Claim 8] The heating element according to claim 7 which it comes it thin to carry out by carrying out stamp processing while said storage bag consists of thermal melting arrival nature resin and said predetermined part heats.

[Claim 9] The heating element according to claim 8 with which said storage bag consists of a lamination object of paper or a nonwoven fabric, and a polyethylene film.

[Claim 10] The process of the heating element which comes to have the process which forms a pattern in the storage bag concerned by holding the febrile constituent which generates heat under existence of air in the storage bag of permeability, and said storage bag's being the process of the heating element which it comes to enclose in an airtight bag, and making the predetermined part of said storage bag thin by carrying out stamp processing.

[Claim 11] The process of the heating element which comes to have the process which produces

said storage bag using the ingredient with which the pattern was formed by making it thin when the febrile constituent which generates heat under existence of air is held in the storage bag of permeability, and said storage bag is the process of the heating element which it comes to enclose in an airtight bag and carries out stamp processing of the predetermined part.

[Claim 12] The process of the heating element according to claim 11 made thin by carrying out stamp processing, said storage bag consisting of thermal melting arrival nature resin, and heating said predetermined part.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a heating element and its process. It is related with the heating element which the pattern formed in the storage bag in more detail did not disappear by the steam and friction, and moreover improved the appearance of a pattern, and its process.

[0002]

[Description of the Prior Art] Conventionally, the exoergic constituent which generates heat under existence of air is held in the storage bag (PE liner) of permeability, and the heating element which packed this PE liner with the bag (outside bag) of non-permeability is known. This heating element prepares a non-***** binder layer in one side of a PE liner, and what is used as disposable Cairo thin by small [for warming the flesh side of a guide peg in addition to what warms what is used as the so-called type to stick of Cairo, hand and foot, and the lumbar part] is proposed.

[0003] The pattern which consists of an alphabetic character, a pattern, etc. conventionally is formed in the external surface of said PE liner for the purpose of advertizing improvement in fanciness, a trade name, and a company name. In the former, the pattern is formed by printing to the film material which constitutes a PE liner.

[0004] However, at the time of use, a PE liner is exposed to the steam generated from the exoergic constituent inside a PE liner, rubs against a hand, clothes, etc. with it, and receives the so-called *****. Therefore, there is a problem that the ink which is the component of a pattern tends to come off. Therefore, it has the problem that appearance worsens while color HAGE (decolorization and ****) or fuzz of a pattern is conspicuous, and the pattern of printing fades and being hard coming to read the conventional PE liner as a time passes.

[0005] This invention is made in order to solve this problem, and it aims at offering the heating element which the pattern formed in the PE liner did not disappear by the steam and friction, and moreover improved the appearance of a pattern, and its process.

[0006]

[Means for Solving the Problem] The febrile constituent which generates heat under existence of air is held in the PE liner of permeability, said PE liner is the heating element which it comes to enclose in an airtight bag, and the heating element according to claim 1 which is the 1st invention is characterized by coming to form a pattern in the PE liner concerned by projecting the predetermined part of said PE liner by embossing to the method of outside, or the inner direction.

[0007] while said PE liner consists of thermal melting arrival nature resin and said predetermined part heats, it is desirable by carrying out embossing to project and come to be carried out.

[0008] It is desirable that said PE liner consists of a lamination object of paper or a nonwoven fabric, and a polyethylene film.

[0009] As a process of the 1st invention, moreover, the process of a heating element according to claim 5 The febrile constituent which generates heat under existence of air is held in the PE liner of permeability. Said PE liner is the process of the heating element which it comes to

enclose in an airtight bag, and it is characterized by coming to have the process which forms a pattern in the PE liner concerned by carrying out embossing of the predetermined part of said PE liner by making it project to the method of outside, or the inner direction.

[0010] Moreover, a PE liner may be produced using the ingredient which carried out embossing of the predetermined part beforehand as other processes of the 1st invention.

[0011] It is desirable by carrying out embossing to make it project to the method of outside or the inner direction, said PE liner consisting of thermal melting arrival nature resin, and heating said predetermined part.

[0012] The febrile constituent which generates heat under existence of air is held in the PE liner of permeability, and said PE liner is the heating element which it comes to enclose in an airtight bag, and the heating element according to claim 7 which is the 2nd invention is characterized by coming to form a pattern in the PE liner concerned, when the predetermined part of said PE liner is made thin by stamp processing.

[0013] While said PE liner consists of thermal melting arrival nature resin and said predetermined part heats, it is desirable by carrying out stamp processing to come it thin to be carried out.

[0014] It is desirable that said PE liner consists of a lamination object of paper or a nonwoven fabric, and a polyethylene film.

[0015] Moreover, the febrile constituent with which the process of a heating element according to claim 11 generates heat under existence of air in the PE liner of permeability as a process of the 2nd invention is held, and it is the process of the heating element with which it comes to enclose said PE liner in an airtight bag, and is characterized by coming to have the process which forms a pattern in the PE liner concerned by making it thin by carrying out stamp processing of the predetermined part of said PE liner.

[0016] Moreover, a PE liner may be produced using the ingredient which carried out stamp processing of the predetermined part beforehand as other processes of the 2nd invention.

[0017] It is desirable by carrying out stamp processing to make it thin, said PE liner consisting of thermal melting arrival nature resin, and heating said predetermined part.

[0018] According to the 1st invention, the pattern which becomes a PE liner from an alphabetic character, a pattern, etc. is formed by making the film which constitutes a PE liner project by embossing to the method of outside, or the inner direction partially. Therefore, there are no problems, such as color HAZE of the pattern produced when forming a pattern by the conventional printing, or fuzz.

[0019] Since the pattern is formed by making thin partially thickness of the film which constitutes a PE liner by stamp processing, and making the febrile constituent inside a PE liner be transparent and appear outside according to the 2nd invention, there are no problems, such as color HAZE of the pattern produced like said 1st invention when forming a pattern by the conventional printing, or fuzz.

[0020]

[Embodiment of the Invention] The heating element of this invention Disposable Cairo (for example, a thing **** type [for warming the flesh side of the thing and guide peg which are used as Cairo of the type which warms hand and foot, the lumbar part, etc., and which is not stuck or it sticks] etc. is included), A medical-application heating element with the warm temperature effectiveness (for example, it is used in order to warm and/or keep the part of Homo sapiens or an animal etc. warm) Or it sticks, and dry application-of-heat methods, such as a medical-application heating element of the type which is not stuck, etc. are included, the heating element used for food, a drink, etc. for the purpose of incubation is meant.

[0021] Hereafter, the heating element of this invention and its process are explained to a detail, referring to an accompanying drawing.

[0022] The cross-section explanatory view and drawing 4 the flat-surface explanatory view in which drawing 1 shows one example of the heating element of the 1st invention, and drawing 2 indicate the II-II line sectional view of drawing 1 , and drawing 3 indicates one example of the heating element of the 2nd invention to be are the partial expanded sectional view of drawing 3 .

[0023] First, the heating element in connection with the 1st invention and its process are explained.

[0024] The febrile constituent 2 which generates heat under existence of air is held in the interior of PE liner 1 of permeability, and the heating element shown in drawing 1 -2 is constituted by being enclosed with the interior of an in a bag one outside the airtightness by which said PE liner 1 is not illustrated. In addition, the condition that the heating element shown in drawing 1 -2 is used taking out from an outside bag is shown. Moreover, the pattern 3 is formed in the predetermined part of PE liner 1 of embossing.

[0025] Especially by this invention, the configuration of a pattern 3 is not limited and various patterns, such as an alphabetic character, a graphic form, a pattern, a badge, trade names, or those combination, can be used for it. For example, as shown in drawing 1 , graphic form (Mull) 3a which carried out embossing only of the visible outline, graphic form (trigonum) 3b which carried out embossing of the whole, graphic form (BATSU) 3c which carried out embossing to the line are raised. Moreover, the pattern which consists of patterns that it continued, such as polka dots or a striped pattern, is sufficient.

[0026] What is necessary is just to perform embossing so that it may project to the method of outside, or the inner direction partially at the predetermined parts of delivery and this film in the making machine for embossing shaping which has the male and female mold corresponding to a pattern 3 for the film which constitutes the top face of PE liner 1 when forming a pattern 3 in PE liner 1.

[0027] Since it is what a pattern 3 makes transform physically the film itself which constitutes PE liner 1 by embossing, and is obtained, problems, such as color HAZE of the pattern produced when forming a pattern by the conventional printing, or fuzz, are solved completely.

[0028] After embossing, if it is filled up with said febrile constituent 2 between the films of two sheets, piling up the film by the side of the top face to which the pattern was given, and the film by the side of an inferior surface of tongue, and fabricating to saccate, said PE liner 1 will be made. Furthermore, if PE liner 1 is enclosed with a bag (not shown) outside airtightness, the heating element of the 1st invention will be obtained.

[0029] In addition, when producing PE liner 1, PE liner 1 may be produced using the ingredient which carried out embossing to the predetermined part beforehand, or after producing PE liner 1 from the ingredient by which embossing is not carried out, embossing may be carried out to a predetermined part.

[0030] Moreover, the film by the side of an inferior surface of tongue may form a pattern like the film by the side of a top face. However, when forming a binder layer, a skid layer, etc. which are later mentioned on the external surface of the film by the side of an inferior surface of tongue, it is not necessary to form a pattern.

[0031] Moreover, you may make it project by carrying out embossing, while producing said PE liner 1 with the film which consists of thermal melting arrival nature resin, heating heat and carrying out thermal melting arrival of the predetermined part of the film concerned. In this case, since thermal melting arrival of the part of a pattern 3 is carried out, the irregularity of PE liner 1 front face which constitutes a pattern 3 does not become Taira and others, consequently a pattern does not disappear.

[0032] Since the lamination object (layered product) of paper or a nonwoven fabric, and a polyethylene film etc. is used, it is soft, there is [it does not become fluffy, but] reinforcement and quality is stable as said film made of thermal melting arrival nature resin, for example, it is desirable. Moreover, the lamination object of other blanket-like objects and a polyethylene film other than a nonwoven fabric may be used.

[0033] For example, a pattern 3 can be formed, if grade embossing of said lamination object is carried out for 0.1 - 0.5 seconds by the about two 500 - 1000 kgf/cm pressure as an ingredient of PE liner 1 where the male for embossings is heated to about 80 - 100 degrees when the lamination object of a nonwoven fabric with a thickness of about 50-200 micrometers and a polyethylene film is used.

[0034] Moreover, it is desirable that the predetermined part of said PE liner 1 is projected to about at least 10-200 micrometers and the method of outside so that a pattern 3 can be checked by looking easily.

[0035] PE liner 1 shown in drawing 1 -2 is a bag which has the permeability of the shape of flat

[which has an aeration stoma or a micropore group], and the part of said PE liner 1 is a permeability side at least. That is, one field (it sets to drawing 1 and is a lower field) may be [the field of another side] a non-permeability side in respect of permeability, and both sides may be permeability sides. Furthermore, you may be the remainder among one side and a part may be a non-permeability side in respect of permeability.

[0036] It is 0.5mm or less extent that the magnitude of an air hole should just be extent from which contents do not fall although there is especially no limitation about the permeability of said PE liner 1. Moreover, quantity of airflow That what is necessary is just the range where the febrile constituent 2 may generate heat, although not limited especially in this invention usually, JIS K A specified to 7129 -- the value measured by law (the moisture-sensitive sensor method) -- 50 - 3000 g/m² and day -- it is -- desirable -- 200 - 1300 g/m² and day -- they are 300 - 1000 g/m² and day especially preferably.

[0037] As an approach of adjusting the permeability in the permeability side of PE liner 1, the approach of performing moderate thermal melting arrival processing can be raised to the sheet thru/or film with which detailed continuation pore was formed. The sheet thru/or film which has 1-50-micrometer uniform continuation pore can be made to be specifically able to distribute the thermal melting arrival section equally, or it can give generally, and permeability can be restricted. Moreover, permeability may be adjusted by performing piercing.

[0038] In addition, the thermal melting arrival in the part of said pattern 3 is for configuration maintenance of a pattern 3 to the last, and is not for accommodation of permeability.

[0039] Moreover, the resin film with which the detailed air hole was prepared can be laminated in a nonwoven fabric, and permeability can be restricted to it.

[0040] Although especially the magnitude of PE liner 1 is not limited in this invention, the thing of the magnitude of the range of 4x6cm - 15x20cm can usually be used for it.

[0041] Although what consists of metal powders (metal powder preferably processed by sulfur or the sulfur containing compound), such as iron powder, activated carbon, water, water retention agents (wood flour, a vermiculite, diatomite, a pearlite, silica gel, an alumina, absorptivity resin, etc.), salt, etc., for example can be used as an exoergic constituent 2 enclosed with PE liner 1, it is not limited to these.

[0042] Moreover, although not illustrated, the binder layer of non-***** which consists of the usual slime which uses rubber etc. as a principal member may be formed in the front face of said PE liner 1, and a releasing paper may be covered on said binder layer. In this case, said releasing paper can be removed on the occasion of use, and PE liner 1 can be stuck on a desired part using a non-** arrival binder layer.

[0043] Furthermore, although not illustrated, if a skid layer is formed in the front face of PE liner 1, it can slide, when using it, putting in PE liner 1 into shoes, and the stop effectiveness can be done so.

[0044] Moreover, negative pressure pinching of the contents is carried out, and it can avoid inclining by adjusting permeability.

[0045] Below, the heating element in connection with the 2nd invention and its process are explained.

[0046] The febrile constituent 2 which generates heat under existence of air is held in the interior of PE liner 1 of permeability like the heating element shown in the above-mentioned drawing 1 -2, and the heating element shown in drawing 3 -4 is common at the point enclosed with the interior of an in a bag one outside the airtightness by which said PE liner 1 is not illustrated. However, into the predetermined part of PE liner 1, it differs in that the pattern 4 is formed by making thickness of a film thin partially by stamp processing. Since the febrile constituent 2 is outside transparent since the part with a crevice 5 has the thin thickness of PE liner 1, and it is visible, the pattern 3 of drawing 1 and the same pattern 4 are acquired using this. In addition, any of a hole or a slot are sufficient as a crevice 5.

[0047] In addition, although the inside side of PE liner 1 is dented and the external surface side has become Taira and others in the part of the pattern 4 shown in drawing 3 -4, this invention is not limited to this and may be projected to an external surface side.

[0048] In addition, like said pattern 3, especially by this invention, the configuration of a pattern 4

is not limited and various patterns, such as an alphabetic character, a graphic form, a pattern, a badge, trade names, those combination, or a pattern that it continued, can be used for it.

[0049] What is necessary is making thin partially thickness of the predetermined parts of delivery and this film by stamp processing at the making machine for stamp shaping which has the male and female mold corresponding to a pattern 4 for the film which constitutes the top face of PE liner 1, and it being outside transparent and making it just make the febrile constituent 2 inside PE liner 1 appear, when forming a pattern 4 in PE liner 1.

[0050] Since it is what the pattern 4 acquired by stamp processing makes transform physically the film itself which constitutes PE liner 1 by stamp processing like said pattern 3, and is obtained, problems, such as color HAZE of the pattern produced when forming a pattern by the conventional printing, or fuzz, are solved completely.

[0051] After stamp processing, if it is filled up with said febrile constituent 2 between the films of two sheets, piling up the film by the side of the top face in which the pattern was formed, and the film by the side of an inferior surface of tongue, and fabricating to saccate, said PE liner 1 will be made. About whether a pattern is formed or not, any are sufficient as the film by the side of an inferior surface of tongue like said pattern 3. Furthermore, if PE liner 1 is enclosed with a bag (not shown) outside airtightness, the heating element of the 2nd invention will be obtained.

[0052] In addition, when producing PE liner 1, PE liner 1 may be beforehand produced using the ingredient which carried out stamp processing into a predetermined part, or after producing PE liner 1 from the ingredient by which stamp processing is not carried out, stamp processing may be carried out at a predetermined part.

[0053] Moreover, while producing said PE liner 1 with the film which consists of thermal melting arrival nature resin, you may make it thin by carrying out stamp processing, heating and carrying out thermal melting arrival of the predetermined part of the film concerned. In this case, since thermal melting arrival of the part of a pattern 4 is carried out, a pattern 4 does not disappear.

[0054] What is necessary is just to use the lamination object of paper or a nonwoven fabric 6, and a polyethylene film 7 etc. like the above-mentioned as said film made of thermal melting arrival nature resin.

[0055] For example, when the lamination object of the nonwoven fabric 6 with a thickness of about 50–200 micrometers and a polyethylene film 7 is used as an ingredient of PE liner 1, If grade stamp processing of said lamination object is carried out for 0.1 – 0.5 seconds by the about two 500 – 1000 kgf/cm pressure where the male for stamp processing is heated to about 80 – 100 degrees As shown in drawing 4, a crevice 5 is formed in the predetermined part of a polyethylene film 7 of thermal melting arrival, consequently a pattern 4 can be formed.

[0056] Moreover, when the thickness of PE liner 1 is 50–200 micrometers so that the febrile constituent 2 may be made clearly transparent outside and a pattern 4 can be checked by looking easily, it is desirable that stamp processing is carried out in the thickness said whose predetermined part is about 25–100 micrometers.

[0057] In this way, by making some PE liners thin and forming a pattern, if contents are put into the PE liner concerned, a pattern will appear more vividly and will go up.

[0058]

[Effect of the Invention] Since the pattern is formed in a PE liner by giving irregularity to a PE liner by embossing, or making thickness of a PE liner thin partially by stamp processing according to this invention, a pattern does not disappear by the steam and friction and, moreover, the appearance of a pattern can be improved.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the flat-surface explanatory view showing one example of the heating element of the 1st invention.

[Drawing 2] It is the II-II line sectional view of drawing 1 .

[Drawing 3] It is the cross-section explanatory view showing one example of the heating element of the 2nd invention.

[Drawing 4] It is the partial expanded sectional view of drawing 3 .

[Description of Notations]

1 PE Liner

2 Febrile Constituent

3 Four Pattern

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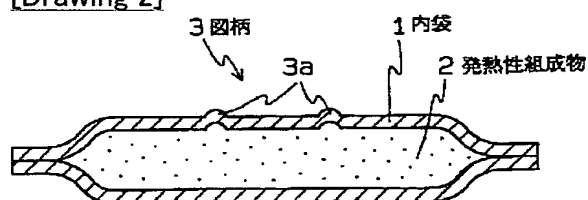
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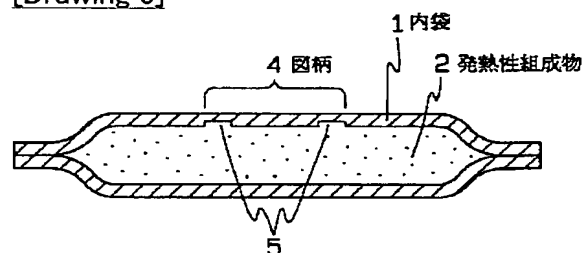
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DRAWINGS

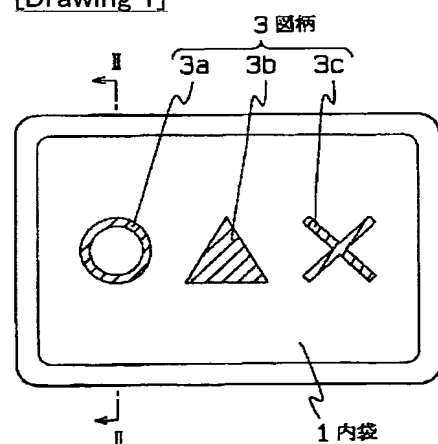
[Drawing 2]



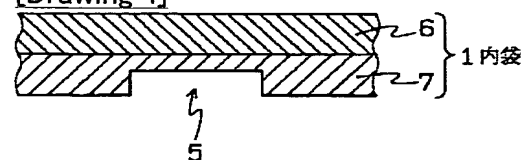
[Drawing 3]



[Drawing 1]



[Drawing 4]



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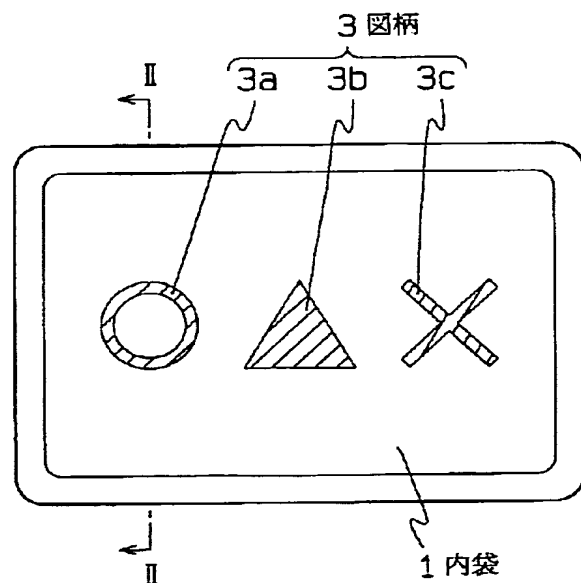
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(54) 【発明の名称】 発熱体およびその製法

(57) 【要約】

【課題】 内袋に形成された図柄が水蒸気および摩擦によって消えることがなく、しかも図柄の見栄えをよくした発熱体およびその製法を提供する。

【解決手段】 通気性の内袋1内に空気の下で発熱する発熱性組成物が収容されており、前記内袋1が気密性袋内に封入されてなる発熱体であって、前記内袋1の所定の部分がエンボス加工により外方または内方へ突出されることにより、図柄3が形成されてなることを特徴とする発熱体。



【特許請求の範囲】

【請求項 1】 通気性の収納袋内に空気の下で発熱する発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体であって、前記収納袋の所定の部分がエンボス加工により外方または内方へ突出されることにより、当該収納袋に図柄が形成されてなる発熱体。

【請求項 2】 前記収納袋が熱融着性樹脂からなり、前記所定の部分が加熱しながらエンボス加工することにより突出されてなる請求項 1 記載の発熱体。

【請求項 3】 前記収納袋が紙または不織布とポリエチレンフィルムとのラミネート体からなる請求項 2 記載の発熱体。

【請求項 4】 通気性の収納袋内に空気の下で発熱する発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体の製法であって、前記収納袋の所定の部分をエンボス加工することにより外方または内方へ突出させることにより、当該収納袋に図柄を形成する工程を有してなる発熱体の製法。

【請求項 5】 通気性の収納袋内に空気の下で発熱する発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体の製法であって、所定の部分をエンボス加工することにより外方または内方へ突出させることにより図柄が形成された材料を用いて、前記収納袋を作製する工程を有してなる発熱体の製法。

【請求項 6】 前記収納袋が熱融着性樹脂からなり、前記所定の部分を加熱しながらエンボス加工することによって外方または内方へ突出させる請求項 5 または 6 記載の発熱体の製法。

【請求項 7】 通気性の収納袋内に空気の下で発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体であって、前記収納袋の所定の部分がスタンプ加工により薄くされることにより、当該収納袋に図柄が形成されてなる発熱体。

【請求項 8】 前記収納袋が熱融着性樹脂からなり、前記所定の部分が加熱しながらスタンプ加工することにより薄くされてなる請求項 7 記載の発熱体。

【請求項 9】 前記収納袋が紙または不織布とポリエチレンフィルムとのラミネート体からなる請求項 8 記載の発熱体。

【請求項 10】 通気性の収納袋内に空気の下で発熱する発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体の製法であって、前記収納袋の所定の部分をスタンプ加工することにより薄くさせることにより、当該収納袋に図柄を形成する工程を有してなる発熱体の製法。

【請求項 11】 通気性の収納袋内に空気の下で発熱する発熱性組成物が収容されており、前記収納袋が気密性袋内に封入されてなる発熱体の製法であって、所定の部分をスタンプ加工することにより薄くさせることに

より図柄が形成された材料を用いて、前記収納袋を作製する工程を有してなる発熱体の製法。

【請求項 12】 前記収納袋が熱融着性樹脂からなり、前記所定の部分を加熱しながらスタンプ加工することによって薄くさせる請求項 11 記載の発熱体の製法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は発熱体およびその製法に関する。さらに詳しくは収納袋に形成された図柄が水蒸気および摩擦によって消えることがなく、しかも図柄の見栄えをよくした発熱体およびその製法に関する。

【0002】

【従来の技術および発明が解決しようとする課題】従来より、空気の下で発熱する発熱組成物を通気性の収納袋（内袋）に収容し、この内袋を非通気性の袋（外袋）で包装した発熱体が知られている。この発熱体は、内袋の片面に非転着性粘着剤層を設け、いわゆる貼るタイプのカイロとして用いるものや、手足や腰部を温めるもの以外に、足の裏を温めるための小型で薄型の使い捨てカイロとして用いるものなどが提案されている。

【0003】前記内袋の外面には、装飾性の向上、商品名や社名を宣伝するなどの目的で、従来より文字および／または模様などからなる図柄が形成されている。従来では、内袋を構成するフィルム材料に印刷を施すことにより図柄を形成している。

【0004】しかし、内袋は、使用時には、内袋内部の発熱組成物から発生する水蒸気にさらされ、それとともに手や衣服などにこすれ、いわゆる湿まきつを受ける。そのため、図柄の成分であるインクがはげやすいという問題がある。したがって、従来の内袋は、使用時間が経過するにつれて図柄の色ハゲ（脱色や落色）または毛羽立ちが目立ち印刷の図柄がぼけて読みにくくなるとともに、見栄えがわるくなるという問題がある。

【0005】本発明はかかる問題を解消するためになされたものであり、内袋に形成された図柄が水蒸気および摩擦によって消えることがなく、しかも図柄の見栄えをよくした発熱体およびその製法を提供することを目的とする。

【0006】

【課題を解決するための手段】第 1 発明である請求項 1 記載の発熱体は、通気性の内袋内に空気の下で発熱する発熱性組成物が収容されており、前記内袋が気密性袋内に封入されてなる発熱体であって、前記内袋の所定の部分がエンボス加工により外方または内方へ突出されることにより、当該内袋に図柄が形成されてなることを特徴とするものである。

【0007】前記内袋が熱融着性樹脂からなり、前記所定の部分が加熱しながらエンボス加工することにより突出されてなるのが好ましい。

【0008】前記内袋が紙または不織布とポリエチレン

フィルムとのラミネート体からなるのが好ましい。

【0009】また、第1発明の製法として、請求項5記載の発熱体の製法は、通気性の内袋内に空気の下で発熱する発熱性組成物が収容されており、前記内袋が気密性袋内に封入されてなる発熱体の製法であって、前記内袋の所定の部分をエンボス加工することにより外方または内方へ突出させることにより、当該内袋に図柄を形成する工程を有してなることを特徴としている。

【0010】また、第1発明の他の製法として、予め所定の部分をエンボス加工した材料を用いて、内袋を作製してもよい。

【0011】前記内袋が熱融着性樹脂からなり、前記所定の部分を加熱しながらエンボス加工することによって外方または内方へ突出させるのが好ましい。

【0012】第2発明である請求項7記載の発熱体は、通気性の内袋内に空気の下で発熱する発熱性組成物が収容されており、前記内袋が気密性袋内に封入されてなる発熱体であって、前記内袋の所定の部分がスタンプ加工により薄くされることにより、当該内袋に図柄が形成されてなることを特徴とするものである。

【0013】前記内袋が熱融着性樹脂からなり、前記所定の部分が加熱しながらスタンプ加工することにより薄くされてなるのが好ましい。

【0014】前記内袋が紙または不織布とポリエチレンフィルムとのラミネート体からなるのが好ましい。

【0015】また、第2発明の製法として、請求項11記載の発熱体の製法は、通気性の内袋内に空気の下で発熱する発熱性組成物が収容されており、前記内袋が気密性袋内に封入されてなる発熱体の製法であって、前記内袋の所定の部分をスタンプ加工することにより薄くさせることにより、当該内袋に図柄を形成する工程を有してなることを特徴としている。

【0016】また、第2発明の他の製法として、予め所定の部分をスタンプ加工した材料を用いて、内袋を作製してもよい。

【0017】前記内袋が熱融着性樹脂からなり、前記所定の部分を加熱しながらスタンプ加工することによって薄くさせるのが好ましい。

【0018】第1発明によれば、内袋を構成するフィルムを部分的に外方または内方へエンボス加工により突出させることにより、内袋に文字および/または模様などからなる図柄を形成している。そのため、従来の印刷によって図柄を形成するばあいには生じる図柄の色ハゲまたは毛羽立ちなどの問題がない。

【0019】第2発明によれば、内袋を構成するフィルムの膜厚を部分的にスタンプ加工により薄くして、内袋内部の発熱性組成物を外部に透けて見えさせることにより、図柄を形成しているため、前記第1発明と同様に、従来の印刷によって図柄を形成するばあいには生じる図柄の色ハゲまたは毛羽立ちなどの問題がない。

【0020】

【発明の実施の形態】本発明の発熱体は、使い捨てカイロ（たとえば手足や腰部などを温める貼るもしくは貼らないタイプのカイロとして用いるものや足の裏を温めるためのうす型のものなどを含む）、温熱効果をもつ医療用発熱体（たとえば、ヒトもしくは動物の局部などを加温および/または保温する目的で用いられる、貼るもしくは貼らないタイプの医療用発熱体などの乾性温電法方式などを含む）、および保温を目的として食品、飲料などに用いる発熱体などを意味する。

【0021】以下、添付図面を参照しながら本発明の発熱体およびその製法を詳細に説明する。

【0022】図1は第1発明の発熱体の一実施例を示す平面説明図、図2は図1のII-II線断面図、図3は第2発明の発熱体の一実施例を示す断面説明図および図4は図3の部分拡大断面図である。

【0023】まず、第1発明にかかわる発熱体およびその製法について説明する。

【0024】図1～2に示される発熱体は、通気性の内袋1の内部に空気の下で発熱する発熱性組成物2が収容され、前記内袋1が図示されていない気密性の外袋の内部に封入されることにより構成されている。なお、図1～2に示される発熱体は、外袋から取り出して使用されている状態が示されている。また、内袋1の所定の部分には、エンボス加工により図柄3が形成されている。

【0025】図柄3の形状は、本発明ではとくに限定されるものではなく、文字、図形、模様、標章、商号またはそれらの組合せなど、種々の図柄を採用することができる。たとえば、図1に示されるように、外形線のみをエンボス加工した図形（マル）3a、全体をエンボス加工した図形（三角）3b、線状にエンボス加工した図形（バツ）3cなどがあげられる。また、水玉模様または縞模様などのような連続した模様からなる図柄でもよい。

【0026】内袋1に図柄3を形成するばあい、内袋1の上面を構成するフィルムを図柄3に対応する雄型および雌型を有するエンボス成形用の成形機に送り、該フィルムの所定の部分に部分的に外方または内方へ突出するようにエンボス加工を施せばよい。

【0027】図柄3は、内袋1を構成するフィルム自体をエンボス加工により物理的に変形させてえられるものであるため、従来の印刷によって図柄を形成するばあいには生じる図柄の色ハゲまたは毛羽立ちなどの問題が完全に解消される。

【0028】エンボス加工ののち、図柄が付された上面側のフィルムと下面側のフィルムとを重ね合わせて袋状に成形しながら2枚のフィルムのあいだに前記発熱性組成物2を充填すれば、前記内袋1ができる。さらに、内袋1を気密性の外袋（図示せず）に封入すれば、第1発

明の発熱体がえられる。

【0029】なお、内袋1を作製するばあい、あらかじめ所定の部分にエンボス加工した材料を用いて、内袋1を作製してもよいし、またはエンボス加工されていない材料から内袋1を作製したのち、所定の部分にエンボス加工してもよい。

【0030】また、下面側のフィルムは、上面側のフィルムと同様に、図柄を形成してもよい。しかし、下面側のフィルムの外面に後述する粘着剤層や滑り止め層などを形成するばあいには図柄を形成しなくてもよい。

【0031】また、前記内袋1を熱融着性樹脂からなるフィルムによって作製するとともに、当該フィルムの所定の部分を熱を加熱して熱融着させながらエンボス加工することにより突出させてもよい。このばあい、図柄3の部分が熱融着されているため、図柄3を構成する内袋1表面の凹凸は平らにならず、その結果、図柄は消えない。

【0032】前記熱融着性樹脂製フィルムとしては、たとえば紙または不織布とポリエチレンフィルムとのラミネート体（積層体）などが用いられ、毛羽立たず、柔らかく、強度があり、品質が安定しているため好ましい。また、不織布の他にも、他の布状体とポリエチレンフィルムとのラミネート体を用いてもよい。

【0033】たとえば、内袋1の材料として、50～200 μm 程度の厚さの不織布とポリエチレンフィルムとのラミネート体を用いたばあい、エンボス加工用の雄型を80～100度程度まで加熱した状態で前記ラミネート体を500～1000 kgf/cm^2 程度の圧力で0.1～0.5秒間程度エンボス加工すれば、図柄3を形成することができる。

【0034】また、図柄3を容易に視認できるように、前記内袋1の所定の部分が少なくとも10～200 μm 程度、外方へ突出されているのが好ましい。

【0035】図1～2に示される内袋1は、通気小孔または微細孔群を有する扁平状の通気性を有する袋であり、前記内袋1は、少なくともその一部が通気性面である。すなわち、一方の面（図1において下側の面）が通気性面で、他方の面が非通気性面であってもよいし、また両面とも通気性面であってもよい。さらに、片面のうち、一部が通気性面で残りが非通気性面であってもよい。

【0036】前記内袋1の通気性については、とくに限定はないが、通気孔の大きさは内容物がこぼれない程度であればよく、たとえば0.5 mm 以下程度であり、また通気量は、発熱性組成物2が発熱しうる範囲であればよく、本発明においてとくに限定されるものではないが、通常、JIS K 7129に規定されているA法（感湿センサー法）により測定した値で50～3000 $\text{g}/\text{m}^2 \cdot \text{day}$ であり、好ましくは200～1300 $\text{g}/\text{m}^2 \cdot \text{day}$ 、とくに好ましくは300～1000

$\text{g}/\text{m}^2 \cdot \text{day}$ である。

【0037】内袋1の通気性面における通気性を調節する方法としては、微細連続気孔の形成されたシートないしフィルムに適度の熱融着処理を施す方法をあげることができる。具体的には、たとえば、1～50 μm の均一な連続気孔を有するシートないしフィルムに熱融着部を均等に分散させ、あるいは全般に施して通気性を制限することができる。また、穿孔加工を施すことにより通気性を調節してもよい。

10 【0038】なお、前記図柄3の部分における熱融着は、あくまでも図柄3の形状保持のためであり、通気性の調節のためではない。

【0039】また、不織布に、微細通気孔の設けられた樹脂フィルムをラミネートして、通気性を制限することができる。

【0040】内袋1の大きさは、本発明においてとくに限定されないが、通常、4×6 cm ～15×20 cm の範囲の大きさのものをを用いることができる。

20 【0041】内袋1に封入する発熱組成物2としては、たとえば鉄粉などの金属粉（好ましくは、イオウまたは含イオウ化合物で処理された金属粉）、活性炭、水、保水剤（木粉、バーミキュライト、けい藻土、パーライト、シリカゲル、アルミナ、吸水性樹脂など）、食塩などからなるものをを用いることができるが、これらに限定されるものではない。

【0042】また、図示されていないが、前記内袋1の表面にゴムなどを主材とする通常の粘着性物質からなる非転着性の粘着剤層を形成し、前記粘着剤層上に剥離紙を被覆してもよい。このばあい、使用に際しては前記剥離紙を剥がし、非転着粘着剤層を利用して内袋1を所望の部位に貼付することができる。

30 【0043】さらに、図示されていないが、内袋1の表面に滑り止め層を形成すれば、内袋1を靴の中に入れて使用するばあいなどにすべり止め効果を奏することができる。

【0044】また、通気性を調節することにより内容物を陰圧挟持して片寄らないようにすることもできる。

【0045】つぎに、第2発明にかかわる発熱体およびその製法について説明する。

40 【0046】図3～4に示される発熱体は、前述の図1～2に示される発熱体と同様に、通気性の内袋1の内部に空気の下で発熱する発熱性組成物2が収容され、前記内袋1が図示されていない気密性の外袋の内部に封入されている点では共通している。しかし、内袋1の所定の部分には、スタンプ加工によりフィルムの膜厚を部分的に薄くすることにより、図柄4が形成されている点で異なる。凹部5がある部分は、内袋1の膜厚が薄いため、発熱性組成物2が外部に透けて見えるため、これを利用して図1の図柄3と同様の図柄4がえられる。なお、凹部5は、穴または溝のいずれでもよい。

【0047】なお、図3～4に示される図柄4の部分では、内袋1の内面側が凹み、外面側は平らになっているが、本発明はこれに限定されるものではなく、外面側に突出してもよい。

【0048】なお、図柄4の形状は、前記図柄3と同様に、本発明ではとくに限定されるものではなく、文字、図形、模様、標章、商号またはそれらの組合せ、または連続した模様など、種々の図柄を採用することができる。

【0049】内袋1に図柄4を形成するばあい、内袋1の上面を構成するフィルムを図柄4に対応する雄型および雌型を有するスタンプ成形用の成形機に送り、該フィルムの所定の部分の膜厚を部分的にスタンプ加工により薄くして内袋1の内部の発熱性組成物2を外部に透けて見えさせるようにすればよい。

【0050】スタンプ加工によりえられる図柄4は、前記図柄3と同様に、内袋1を構成するフィルム自体をスタンプ加工により物理的に変形させてえられるものであるため、従来の印刷によって図柄を形成するばあいに生じる図柄の色ハゲまたは毛羽立ちなどの問題が完全に解

消される。

【0051】スタンプ加工ののち、図柄が形成された上面側のフィルムと下面側のフィルムとを重ね合わせて袋状に成形しながら2枚のフィルムのあいだに前記発熱性組成物2を充填すれば、前記内袋1ができる。下面側のフィルムは、前記図柄3と同様に、図柄を形成するか否かについてはいずれでもよい。さらに、内袋1を気密性の外袋（図示せず）に封入すれば第2発明の発熱体がえられる。

【0052】なお、内袋1を作製するばあい、あらかじめ所定の部分にスタンプ加工した材料を用いて、内袋1を作製してもよいし、またはスタンプ加工されていない材料から内袋1を作製したのち、所定の部分にスタンプ加工してもよい。

【0053】また、前記内袋1を熱融着性樹脂からなるフィルムによって作製するとともに、当該フィルムの所定の部分を加熱して熱融着させながらスタンプ加工することにより薄くしてもよい。このばあい、図柄4の部分が熱融着されているため、図柄4は消えない。

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*【0054】前記熱融着性樹脂製フィルムとしては、前述と同様に、たとえば紙または不織布6とポリエチレンフィルム7とのラミネート体などを用いればよい。

【0055】たとえば、内袋1の材料として、50～200 μm 程度の厚さの不織布6とポリエチレンフィルム7とのラミネート体を用いたばあい、スタンプ加工用の雄型を80～100度程度まで加熱した状態で前記ラミネート体を500～1000 kgf/cm^2 程度の圧力で0.1～0.5秒間程度スタンプ加工すれば、図4に示されるように、ポリエチレンフィルム7の所定の部分には熱融着により凹部5が形成され、その結果、図柄4を形成することができる。

【0056】また、発熱性組成物2を外部にはっきりと透けさせて図柄4を容易に視認できるように、内袋1の厚さが50～200 μm のばあい、前記所定の部分が25～100 μm 程度の厚さにスタンプ加工されるのが好ましい。

【0057】こうして、内袋の一部を薄くして図柄を形成することにより、当該内袋に内容物を入れると図柄がより鮮明に浮かびあがる。

【0058】

【発明の効果】本発明によれば、エンボス加工によって内袋に凹凸をつけたり、またはスタンプ加工により内袋の膜厚を部分的に薄くすることによって、内袋に図柄を形成しているため、図柄が水蒸気および摩擦によって消えることがなく、しかも図柄の見栄えをよくすることができる。

【図面の簡単な説明】

【図1】第1発明の発熱体の一実施例を示す平面説明図である。

【図2】図1のII-II線断面図である。

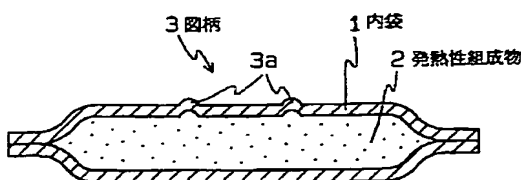
【図3】第2発明の発熱体の一実施例を示す断面説明図である。

【図4】図3の部分拡大断面図である。

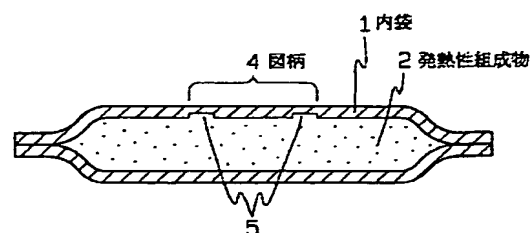
【符号の説明】

- 1 内袋
- 2 発熱性組成物
- 3、4 図柄

【図2】



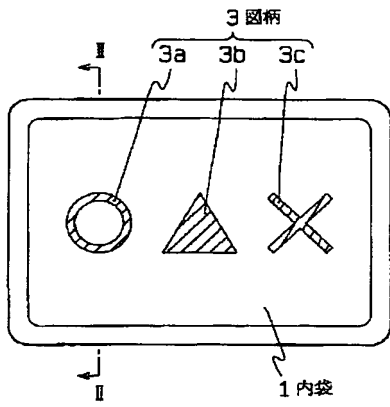
【図3】



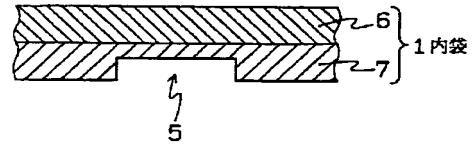
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【図 1】



【図 4】



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